Hanqi Guo

CONTACT INFORMATION

9700 South Cass Avenue
Building 240
Argonne, IL 60439

Phone: 630-252-7225
Fax: 630-252-5986
E-mail: hguo@anl.gov
Web: http://www.mcs.anl.gov/~hguo

RESEARCH INTERESTS

Large scientific data visualization, Flow visualization, Multivariate data visualization.

EDUCATION

Peking University, Beijing, China

Ph.D., Computer Science **September, 2009–Jul, 2013**
Dissertation Title: "Scalable Visual Analysis on Pathlines in Large-Scale Flow Field Data"
Advisor: Prof. Xiaoru Yuan

Beijing University of Posts and Telecommunications, Beijing, China

B.S., Mathematics and Applied Mathematics **September, 2005–June, 2009**
Minor in Telecommunications Engineering
Thesis Title: "Research on Flow Visualization" (Excellent Undergraduate Thesis Award)
Thesis Advisor: Prof. Xiaoru Yuan

PROFESSIONAL EXPERIENCE

Postdoctoral Appointee, **August, 2014–present**
Mathematics and Computer Science Division, Argonne National Laboratory

Research Assistant, **September, 2009–July, 2014**
Key Laboratory of Machine Perception (Ministry of Education), Peking University
Department of Machine Intelligence, School of EECS, Peking University

JOURNAL PUBLICATIONS

- **Hanqi Guo**, Carolyn L. Phillips, Tom Peterka, Dmitry Karpeyev, and Andreas Glatz, "Extracting, Tracking, and Visualizing Vortices in 3D Complex-Valued Superconductor Simulation Data." *IEEE Transactions on Visualization and Computer Graphics (Proc. IEEE SciVis '15)*, 22(1):827–836, 2016. (Acceptance rate: 33/134=24.6%)
- **Hanqi Guo**, Jiang Zhang, Richen Liu, Lu Liu, Xiaoru Yuan, Jian Huang, Xiangfei Meng, and Jingshan Pan, "Advection-based Sparse Data Management for Visualizing Unsteady Flow." *IEEE Transactions on Visualization and Computer Graphics (Proc. IEEE SciVis '14)*, 20(12):2555–2564, 2014. (Acceptance rate: 35/136=25.7%)
- Fan Hong, Chufan Lai, **Hanqi Guo**, Enya Shen, Xiaoru Yuan, and Sikun Li, "FLDA: Latent Dirichlet Allocation Based Unsteady Flow Analysis." *IEEE Transactions on Visualization and Computer Graphics (Proc. IEEE SciVis '14)*, 20(12):2545–2554, 2014. (Acceptance rate: 35/136=25.7%)
- Richen Liu, **Hanqi Guo**, and Xiaoru Yuan, "Seismic Structure Extraction Based on Multi-scale Sensitivity Analysis." *Journal of Visualization*, 17(3):157–166, 2014.
- **Hanqi Guo**, Xiaoru Yuan, Jian Huang, and Xiaomin Zhu, "Coupled Ensemble Flow Line Advection and Analysis." *IEEE Transactions on Visualization and Computer Graphics (Proc. IEEE SciVis '13)*, 19(12):2733–2742, 2013. (Acceptance rate: 31/126=24.6%)
- **Hanqi Guo**, He Xiao, and Xiaoru Yuan, "Scalable Multivariate Volume Visualization and Analysis based on Dimension Projection and Parallel Coordinates." *IEEE Transactions on Visualization and Computer Graphics*, 18(9):1397–1410, 2012.
- **Hanqi Guo**, Ningyu Mao, and Xiaoru Yuan, "WYSIWYG (What You See Is What You Get) Volume Visualization." *IEEE Transactions on Visualization and Computer Graphics (Proc. IEEE Vis '11)*, 17(3):2106–2114, 2011. (Acceptance rate: 49/194=25.3%)
- Xiaoru Yuan, He Xiao, **Hanqi Guo**, Peihong Guo, Wesley Kendall, Jian Huang, and Yongxian Zhang, "Scalable Multi-variate Analytics of Seismic and Satellite-based Observational Data." *IEEE Transactions on Visualization and Computer Graphics (Proc. IEEE Vis '10)*, 16(3):1413–1420, 2010. (Acceptance rate: 49/185=26.4%)

CONFERENCE PUBLICATIONS

- Richen Liu, **Hanqi Guo**, and Xiaoru Yuan, "A Bottom-Up Scheme for User-Defined Feature Comparison in Ensemble Data." In *Proceedings of SIGGRAPH Asia 2015 Symposium on Visualization in High Performance Computing*, pages 10:1–10:4, Kobe, Japan, Nov. 2–5, 2015.

- **Hanqi Guo**, Fan Hong, Qingya Shu, Jiang Zhang, Jian Huang, and Xiaoru Yuan, "Scalable Lagrangian-based Attribute Space Projection for Multivariate Unsteady Flow Data." In *Proceedings of IEEE Pacific Visualization Symposium (PacificVis 2014)*, pages 33–40, Yokohama, Japan, Mar. 4–7, 2014. (Acceptance rate: 29/99=29.3%)
- **Hanqi Guo**, Wei Li, and Xiaoru Yuan, "Transfer Function Map." In *Proceedings of IEEE Pacific Visualization Symposium (PacificVis 2014), Notes Paper*, pages 262–266, Yokohama, Japan, Mar. 4–7, 2014.
- **Hanqi Guo** and Xiaoru Yuan, "Local WYSIWYG Volume Visualization." In *Proceedings of IEEE Pacific Visualization Symposium (PacificVis 2013)*, pages 65–72, Sydney, NSW, Australia, Feb. 26–Mar. 1, 2013. (Acceptance rate: 34/118=28.8%)
- **Hanqi Guo**, Xiaoru Yuan, Jie Liu, Guihua Shan, Xuebin Chi, and Fei Sun, "Interference Microscopy Volume Illustration for Biomedical Data." In *Proceedings of IEEE Pacific Visualization Symposium (PacificVis 2012)*, pages 177–184, Songdo, Korea, Feb. 28–Mar. 2, 2012. (Acceptance rate: 30/89=33.7%)
- **Hanqi Guo**, He Xiao, and Xiaoru Yuan, "Multi-Dimensional Transfer Function Design based on Flexible Dimension Projection Embedded in Parallel Coordinates." In *Proceedings of IEEE Pacific Visualization Symposium (PacificVis 2011)*, pages 19–26, Hong Kong, March 1–4, 2011. (Acceptance rate: 27/81=33.3%)
- **Hanqi Guo**, Zuchao Wang, Bowen Yu, Huijing Zhao, and Xiaoru Yuan, "TripVista: Triple Perspective Visual Trajectory Analytics and Its Application on Microscopic Traffic Data at a Road Intersection." In *Proceedings of IEEE Pacific Visualization Symposium (PacificVis 2011)*, pages 163–170, Hong Kong, March 1–4, 2011. (Acceptance rate: 27/81=33.3%)

Other Publications

- Jiang Zhang, **Hanqi Guo**, and Xiaoru Yuan, "High Performance Flow Field Visualization with High-Order Access Dependencies." *IEEE VIS 2015 (Poster)*, Chicago, IL, USA, October 25–30, 2015.
- Richen Liu, **Hanqi Guo**, and Xiaoru Yuan, "A Bottom-Up Scheme for User-Defined Feature Exploration in Vector Field Ensembles." *IEEE VIS 2015 (Poster)*, Chicago, IL, USA, October 25–30, 2015.
- **Hanqi Guo**, Carolyn L. Phillips, Tom Peterka, Dmitry Karpeyev, and Andreas Glatz, "Extracting, Tracking and Visualizing Magnetic Flux Vortices in 3D Complex-Valued Superconductor Simulation Data." *SciDAC PI Meeting*, Bethesda, MD, USA,
- Jiang Zhang, **Hanqi Guo**, and Xiaoru Yuan, "High Order Access Dependency based Flow Data Management for Field Line Computation." *IEEE Pacific Visualization Symposium 2015 (Poster)*. Hangzhou, China, April 14–17, 2015.
- Richen Liu, **Hanqi Guo**, Jiang Zhang, and Xiaoru Yuan, "Longest Common Subsequence based Multi-Scale Analysis for Vector Field Ensembles." *IEEE Pacific Visualization Symposium 2015 (Poster)*. Hangzhou, China, April 14–17, 2015.
- Qingya Shu, **Hanqi Guo**, Limei Che, Weicong Lyu, and Xiaoru Yuan, "EnsembleGraph: Visualizing Variations for Ensemble Simulation Exploration." *IEEE VIS 2014 (Poster)*, Paris, France, November 9–14, 2014. (Honorable Mention Award)
- Fan Hong, Siming Chen, **Hanqi Guo**, Xiaoru Yuan, Jian Huang, and Yongxian Zhang, "Visual Analysis of Ionospheric Disturbance Hypotheses about Earthquake." *IEEE VIS 2013 (Poster)*, Atlanta, GA, USA, October 13–18, 2013.
- **Hanqi Guo**, Wei Li, and Xiaoru Yuan, "Transfer Function Map: A Collaborative Design Space." *IEEE Pacific Visualization Symposium 2013 (Poster)*. Sydney, NSW, Australia, Feb. 26–Mar. 1, 2013.
- Zuchao Wang, **Hanqi Guo**, and Xiaoru Yuan, "Visual Analysis on Traffic Trajectory Data." *Discovery Exhibition, IEEE VisWeek 2011*. Providence, RI, USA, October 22–28, 2011.
- **Hanqi Guo**, He Xiao, Min Lu, and Xiaoru Yuan, "Scalable Multivariate Volume Visualization and Analysis." *IEEE Symposium on Large-Scale Data Analysis and Visualization 2011 (Poster)*. Providence, RI, USA, October 23–24, 2011.
- Zuchao Wang, **Hanqi Guo**, Bowen Yu, and Xiaoru Yuan. "Interactive Visualization of 160 Years' Global Hurricane Trajectory Data." *IEEE Pacific Visualization Symposium 2011 (Poster)*. Hong Kong, March 1–4, 2011.
- **Hanqi Guo**, Peihong Guo, He Xiao, and Xiaoru Yuan, "Multi-Dimensional Transfer Function Design based on Combined Interface of Parallel Coordinates and Dimension Projection." *IEEE Visualization Conference 2010 (Poster)*, Salt Lake City, UT, USA, October 24–29, 2010.

- **Hanqi Guo**, Ning Zhang, and Xiaoru Yuan, "A Visual Analytics Tool for Traffic Data Analysis." *IEEE Pacific Visualization Symposium 2010 (Poster).* Taipei, March 2–5, 2010.
- **Hanqi Guo** and Xiaoru Yuan, "Streamline Seed Points Placement Strategy for Multi-resolution 2D Flow Visualization." *IEEE Pacific Visualization Symposium 2009 (Poster).* Beijing, China, April 20–23, 2009.

Professional Service

Conference Program Committee Members

- IEEE Scientific Visualization Conference **2015**
- IEEE Pacific Visualization Symposium **2016**
- IEEE Pacific Visualization Symposium, Visualization Notes **2015–2016**
- China Visualization Conference **2014–2015**
- HPC China, Visualization Track **2014–2015**

Conference Organizing Committee Members

- IEEE VIS Conference, Student Volunteer Co-Chair **2015**

Journal Paper Reviewers

- Transactions on Visualization and Computer Graphics (TVCG), IEEE **2014**
- Computer Graphics Forum (CGF), Wiley **2015**
- Journal of Visualization (JOV), Springer **2014–2015**
- Journal of Computer Science and Technology (JCST), Springer **2013**

Conference Paper External Reviewers

- IEEE Scientific Visualization Conference (IEEE SciVis) **2012, 2014**
- Eurographic/IEEE-VGTC Symposium on Visualization (EuroVis) **2015**
- IEEE Pacific Visualization Symposium (PacificVis) **2014–2015**
- IEEE Symposium on Biological Data Visualization (BioVis) **2013**
- International Conference on Computer-Aided Design and Computer Graphics (CAD/CG) **2013**
- International Conference on Information Visualization Theory and Applications (IVAPP) **2014**

Proposal Reviewers

- U.S. National Science Foundation **2015**

Honours and Awards

- Honorable Mention Award, IEEE VIS Posters **2014**
- Excellent Paper Award, The Annual Academic Conference for Ph.D. Candidates, China Association for Science and Technology **2014**
- Top 10 Student Paper Award, School of EECS, Peking University **2012, 2014 (twice)**
- SEMPIO Scholarship, Peking University **2013**
- National Scholarship for Graduate Students, Ministry of Education, China **2012**
- Founder Scholarship, Peking University **2012**
- Excellent Paper Award, Academician Shi Qingyun Fund, Peking University **2012**
- Excellent Undergraduate Thesis Award, Beijing Univ. of Posts and Telecoms. **2009**
- Excellent Student Leader Award, Beijing Univ. of Posts and Telecoms. **2008**

Public Talks

- 7/18/15, Panelist, How to Write a High Quality Paper, ChinaVis 2015 Conference, Tianjin, China
- 7/11/15, Large Data Visualization Combining SciVis and InfoVis, 7th Visualization Summer School, Peking University, Beijing, China
- 7/7/14, Large Scientific Data Visualization and Visual Analytics, 6th Visualization Summer School, Peking University, Beijing, China
- 1/21/14, Scalable Lagrangian-based Visual Analysis on Multivariate Ensemble Simulations, Mathematics and Computing Science Seminar, Argonne National Laboratory, Argonne, IL, USA
- 8/17/13, Introduction and Practice on High Performance Visualization, 5th Visualization Summer School, Peking University, Beijing, China

Technical Skills

- **Languages & APIs:** C/C++, Fortran 90, MPI, Python, shell, NVidia CUDA, OpenGL, NVidia Cg, GLSL, Qt, VTK, etc.
- **Misc:** LaTeX, cmake, git, svn, etc.

Activities

- Student Volunteer, IEEE VIS (VisWeek) **2010, 2011, 2013**
- Student Volunteer, IEEE Pacific Visualization 2009, Beijing, China **2009**
- Vice-President, Student Orchestra in Beijing Univ. of Posts and Telecoms. **2006–2008**

References

Available upon request